US DEPARTMENT OF AGRICULTURE
FOREST SERVICE

5220

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Report No. S-69-6 September 1969

# AERIAL SURVEY ON THE MANISTEE NATIONAL FOREST TO DETECT OAK DEFOLIATION

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## INTRODUCTION

Oak defoliation is almost an annual occurrence on the Manistee National Forest. Late spring frosts kill the tender leaves in late May. Occasionally, a leafroller, Archips spp., abounds. Later in the summer, the post-oak locust, Dendrotettix quercus Pack., defoliates small areas, 100-200 acres.

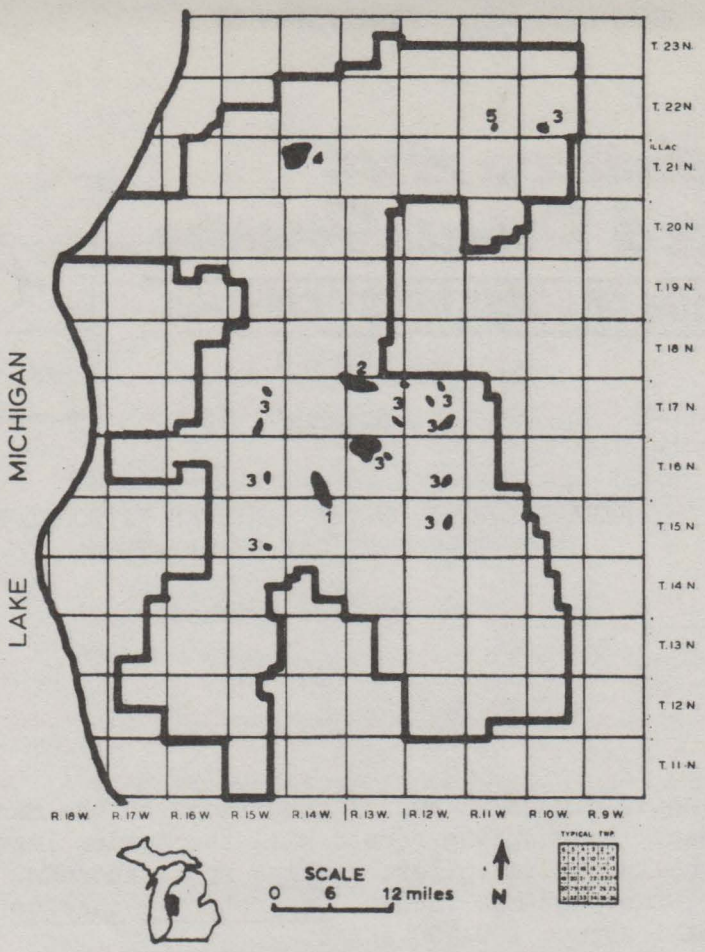
The first aerial survey is flown to detect the early summer defoliators. The late defoliation is determined during the jack pine budworm aerial survey in August.

## METHODS

Cessna 182 was flown in north-south lines, spaced 6 miles apart on June 24, 1969. Most of the flight was about 1000 ft. above ground and at 100 mph.

## RESULTS

Frost defoliation on the lower crowns of oak was observed throughout the Forest. Complete crown defoliation, such as caused by the leafrollers, was not found. Defoliation of less than 50% cannot be seen from the air. The accompanying map shows miscellaneous tree mortalities which are explained in the Table.




TREE MORTALITY ON THE MANISTEE N.F.

SUSPECTED CAUSES OF TREE MORTALITY ON THE MANISTEE N.F.

| Code No. on Map | T. | R. | S. | Acres | Damage | Suspected |
|---|---|---|---|---|---|---|
| 1 | 16N | 14W | 26,27,34,35 | 1000 | Elm Mortality | $H_2O$ and DED[1/] |
| | 15N | 14W | 2,3 | | | |
| 2 | 17N | 13W | 4,5,6 | 200 | Tree Mortality | Fire |
| 3 | 16N | 13W | 3,4,5,7,8,9,10 | 1500 | Hardwood Mortality | $H_2O$ |
| | 17N | 13W | 25 | 200 | " " | " and DED |
| | 17N | 12W | 3,10 | 150 | " " | " |
| | 17N | 12W | 9,15 | 150 | " " | " |
| | 16N | 12W | 26 | 200 | " " | " |
| | 15N | 12W | 14,15 | 300 | " " | " |
| | 15N | 15W | 35 | 100 | " " | " |
| | 16N | 15W | 22,27 | 250 | " " | " |
| | 17N | 15W | 10,11 | 100 | " " | " |
| | 17N | 15W | 27,33 | 600 | " " | " |
| | 22N | 10W | 28,29 | 500 | " " | " |
| 4 | 21N | 14W | 8,9,16,17,18 | 1200 | Hardwood Yellowing | Unknown |
| 5 | 22N | 11W | 27 | 50 | Defoliation & Mortality of Jack Pine & Red Pine | Red-Headed Pine Sawfly |

1/ Dutch elm disease